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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/585,293

04/14/2009

Ilkka Kojo

OUTT 3501

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10/28/2010

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EXAMINER

ABOAGYE, MICHAEL

ART UNIT

PAPER NUMBER

1733

MAIL DATE

DELIVERY MODE

10/28/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/585,293	Applicant(s) KOJO, ILKKA	
	Examiner MICHAEL ABOAGYE	Art Unit 1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 August 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-26 is/are pending in the application.
- 4a) Of the above claim(s) 24-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 14-26 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>01/08/2007; 10/14/2008</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 14-23, drawn to smelting apparatus

Group II, claim(s) 24-26, drawn to smelting method.

2. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the shared features of a fine-grained matter bin with an outlet located essentially at a lower level than the top of the reaction shaft is either obvious over or anticipated by Okamoto et al. (US 6,001,148), accordingly, the special technical feature linking the two inventions, does not provide contribution over the prior art, and no single general concept exist.

Therefore the restriction is appropriate.

3. During a telephone conversation with Attorney John Smith-Hill on 10/06/2010 a provisional election was made with traverse to prosecute the invention of I, claims 14-23. Affirmation of this election must be made by applicant in replying to this Office

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action. Claims 24-26 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 14-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 14 recites the limitation "the top level" in 8. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okomoto et al. (US Patent No. 6,001,148) in view of Frundl et al. (US Patent No. 3,666,248).

Regarding claim 14, Okamoto et al. teaches an installation for providing a concentrate burner (12, figure 1), that is adapted on top of a reaction shaft of a suspension smelting furnace (10, figure 1), with continuous and constant feed of fine-

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grained matter (see, column 4, lines 17-24 and 50-62), comprising a bin having an inlet and an outlet for the fine-grained matter (the pulverized iron ore bin is configured as such with an outlet and inlet, see figure 1); a feed control unit for providing the feed of the fine-grained matter with accurately controlled feed rate (figure 1 shows feed rate data provided at the bin outlet which is an indicator of the presence of a feed rate controller or a control means, see, figures 1 and column 4, lines 50-62); and a pneumatic conveyor adapted to transport the fine-grained matter up to the top level of the suspension smelting furnace (reads on the air conveyance system, see, column 4, lines 15-22); wherein, the outlet of the bin for the fine-grained matter locates essentially at a lower level than the top of the reaction shaft (figure 1 shows such, since the iron ore bin outlet is at a level below the top of the reaction shaft); the feed control unit is adapted to receive the fine-grained matter from the outlet of the bin and to provide the pneumatic conveyor with the feed of the fine-grained matter (figure 1 shows as such); the pneumatic conveyor is adapted to provide the concentrate burner with a feed rate that equals with the feed rate provided by the feed control unit (figure 1 shows such, since the burner is fed with the iron ore concentrate at the same rate as registered at the outlet of the bin).

Okamoto et al. does not particularly specify the type of concentrate burner used.

Frundl et al. teaches as known in the art for furnaces to be provided with burners that are of the sleeve type (see, Frundl et al., column 5, lines 10-15).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Okamoto et al. to use a sleeve type burner, since

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such burner is known to perform well with suspension furnaces as disclosed by Frundl et al., (see, Frundl et al., column 5, lines 10-15).

Regarding claim 15, Okamoto et al. in view of Frundl et al. teaches fine-grained matter that comprises metal concentrate (reads on the pulverized iron ore concentrate, see, Okamoto et al., column 2, lines 23-30 and column 4, lines 17-24).

Regarding claim 16, Okamoto et al. in view of Frundl et al. teaches fine-grained matter that comprises metal concentrate and fluxing agent (see, tables 1 and 4 of Okamoto et al., show an iron ore concentrate with silica oxide as a fluxing agent).

Regarding claim 17, Okamoto et al. in view of Frundl et al. teaches fine-grained matter that comprises metal concentrate, fluxing agent (see, tables 1 and 4) and flue dust (reads on the dust component fed from the dust silo, see, Okamoto et al. figure 3).

Regarding claim 18, Okamoto et al. in view of Frundl et al. teaches a first bin for a dried mixture of metal concentrate and fluxing agent (see Okamoto et al., figures 1 and 4), and a second bin for flue dust (see Okamoto et al., the dust bin, figure 4), a first feed rate controller for the mixture of metal concentrate and fluxing agent and a second feed rate controller for the flue dust (figures 1 and 4 of Okamoto et al., show such feed rate controller with feed rate data).

7. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto et al. (US Patent No. 6,001,148) in view of Frundl et al. (US Patent No. 3,666,248) as applied to claim 14 above and further in view of Becerra-Novoa et al. (US Patent No. 5,445,363).

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Regarding claims 19 and 20, Okamoto et al. in view of Frundl et al. fails to specify the pneumatic conveyance system as been either a dilute-phase pneumatic conveyor or a dense-phase pneumatic conveyor.

Becerra-Novoa et al. teaches as known in the art to provide smelting furnaces with any one of a dilute-phase pneumatic conveyor and a dense-phase pneumatic conveyor (see, Becerra-Novoa et al., column 5, line 59-column 6, line 5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Okamoto et al. in view of Frundl et al. to use a pneumatic conveyance system comprising a dilute-phase pneumatic conveyor or to use a dense-phase pneumatic conveyor as exemplified by Becerra-Novoa et al., in order to push the solid fine-grained matter at high velocity by the gas pressure differential or to order to push the solid fine-grained matter at low velocity by the gas pressure differential respectively.

8. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto et al. (US Patent No. 6,001,148) in view of Frundl et al. (US Patent No. 3,666,248) as applied to claim 14 above and further in view of Becerra-Novoa et al. (US Patent No. 5,445,363) and Davis (US Patent No. 2,757,782).

Okamoto et al. in view of Frundl et al. teaches an air-lift type pneumatic conveyor that is provided with an expansion vessel-adapted to feed the particulate matter into the burner of the suspension smelting furnace (see, figures 1, 3 and 4 of Okamoto et al.), but fails to mention an air lock feeder and an air-slide conveyor.

Becerra-Novoa et al., teaches an air-lift type pneumatic conveyor that is provided with an expansion vessel-adapted to feed the particulate matter into the burner of the suspension smelting furnace via an air-lock feeder (see, Becerra-Novoa et al., column 14, lines 50-60), and said air-lock feeder allows the feed line pressure to be regulated.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Okamoto et al. in view of Frundl et al. to use an air- lock feeder as taught by Becerra-Novoa et al., as it would allow feed line pressure to be regulated (see, Becerra-Novoa et al., column 14, lines 50-60).

Okamoto et al. in view of Frundl et al. and Becerra-Novoa et al. fails to specifically mention an air-slide conveyor.

Davis teaches conveyances systems known in the art and commonly used in furnace and smelter installation systems to include: screw conveyors, air slide conveyor and shuttle conveyors.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Okamoto et al. in view of Frundl et al. and Becerra-Novoa et al. to use a pneumatic conveyance system that is an air-slide conveyor, since such is among the commonly used systems known in the art as taught by Davis and, therefore selection to used such system in the apparatus of Okamoto et al. in view of Frundl et al. and Becerra-Novoa et al. would have meant a mere substitution of one known conveyance system for another which would have only yielded a predictable result.

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9. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto et al. (US Patent No. 6,001,148) in view of Frundl et al. (US Patent No. 3,666,248) as applied to claim 14 above and further in view of Hoper (US Patent No. 4,844,915).

Okamoto et al. in view of Frundl et al. teaches a feed control unit and a pneumatic conveyor that is an air-lift type pneumatic conveyor (see, Okamoto et al., figures 1, 3 and 4).

However, Okamoto et al. in view of Frundl et al. fails to specify said control unit as being a loss-in-weight controller.

Hoper teaches a loss-in-weight controller as one of the known feed control units used in the art (see, Hoper, column 7, lines 1-10) that can be controlled either manually or automatically to provided a constant flow or supply of the feed material to a furnace, a smelter, a reactor or a boiler (see Hoper, column 3, lines 41-55).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Okamoto et al. in view of Frundl et al. to use a feed control unit comprising a loss-in-weight controller as taught by Hoper, as it would allow a constant and continuous flow or supply of the feed material to the furnace (see Hoper, column 3, lines 41-55).

10. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto et al. (US Patent No. 6,001,148) in view of Frundl et al. (US Patent No.

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3,666,248) as applied to claim 14 above and further in view of Becerra-Novoa et al. (US Patent No. 5,445,363) and Hoper (US Patent No. 4,844,915).

Okamoto et al. in view of Frundl et al. teaches a feed control unit, and pneumatic conveyor that is an air-lift type pneumatic conveyor (see, Okamoto et al., figures 1, 3 and 4), but fails to specify the pneumatic conveyance system as been either a dilute-phase pneumatic conveyor.

Becerra-Novoa et al. teaches as known in the art to provide a smelting furnace with a pneumatic conveyor in the form of a dilute-phase (see, Becerra-Novoa et al., column 5, line 59-column 6, line 5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Okamoto et al. in view of Frundl et al. to use a to use a pneumatic conveyance system comprising a dilute-phase pneumatic conveyor as exemplified by Becerra-Novoa et al., in order to push the solid fine-grained matter at high velocity by the gas pressure differential.

Okamoto et al. in view of Frundl et al. and Becerra-Novoa et al. fails to specify said control unit as being a loss-in-weight controller.

Hoper teaches a loss-in-weight controller as one of the known feed control units used in the art (see, Hoper, column 7, lines 1-10) that can be controlled either manually or automatically to provided a constant flow or supply of the feed material to a furnace, a smelter, a reactor or a boiler (see Hoper, column 3, lines 41-55).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Okamoto et al. in view of Frundl et al. and Becerra-

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Novoa et al. to use a feed control unit comprising a loss-in-weight controller as taught by Hoper as it would allow a constant and continuous flow or supply of the feed material to the furnace (see Hoper, column 3, lines 41-55).

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ulrich (US 3539336), Warshawsky (US 3811823) and Weaver (US 2006/0157899) are also cited in PTO-892.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL ABOAGYE whose telephone number is (571)272-8165. The examiner can normally be reached on Mon - Fri 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. A./

Examiner, Art Unit 1733

/Scott Kastler/

Primary Examiner, Art Unit 1733